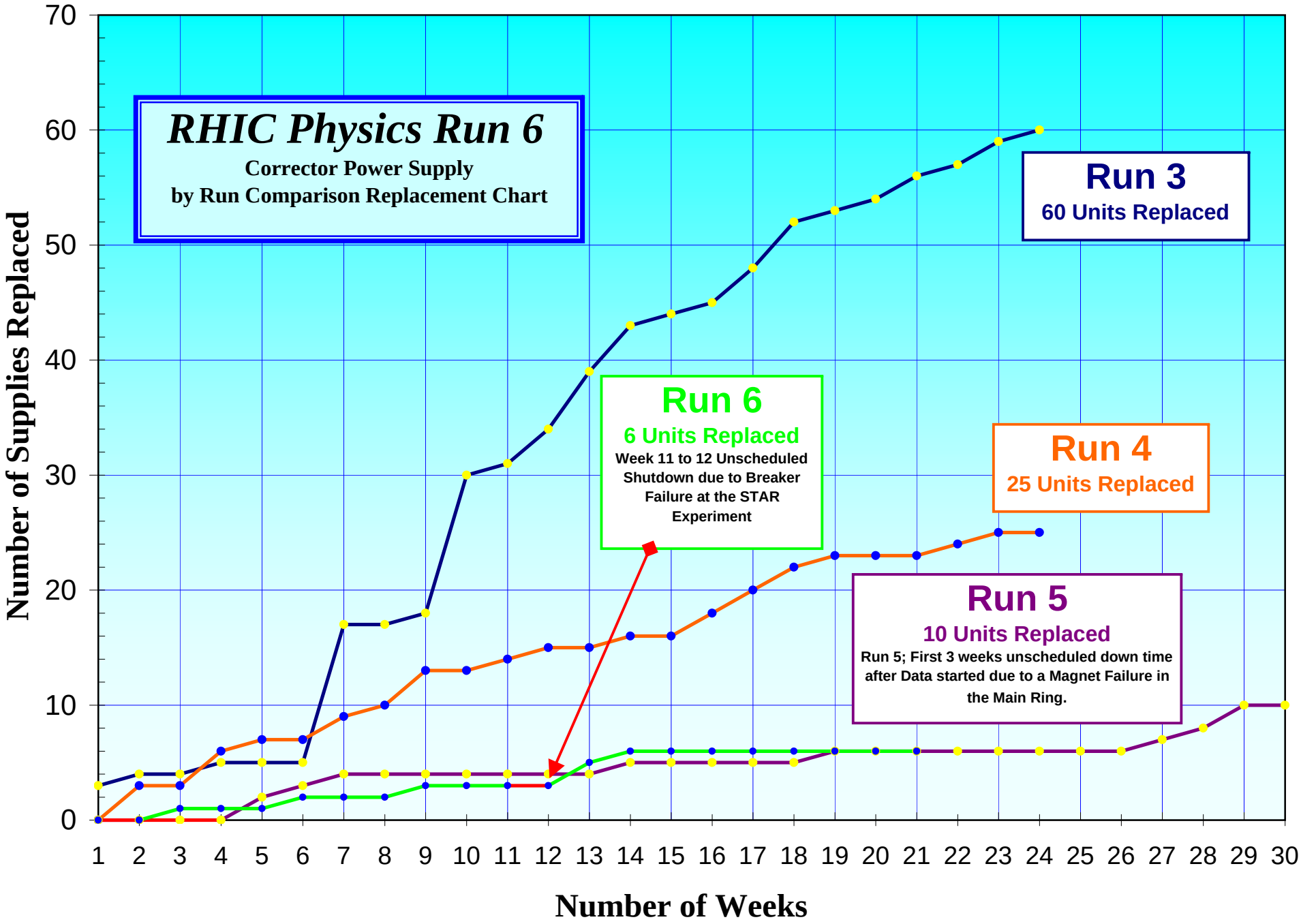
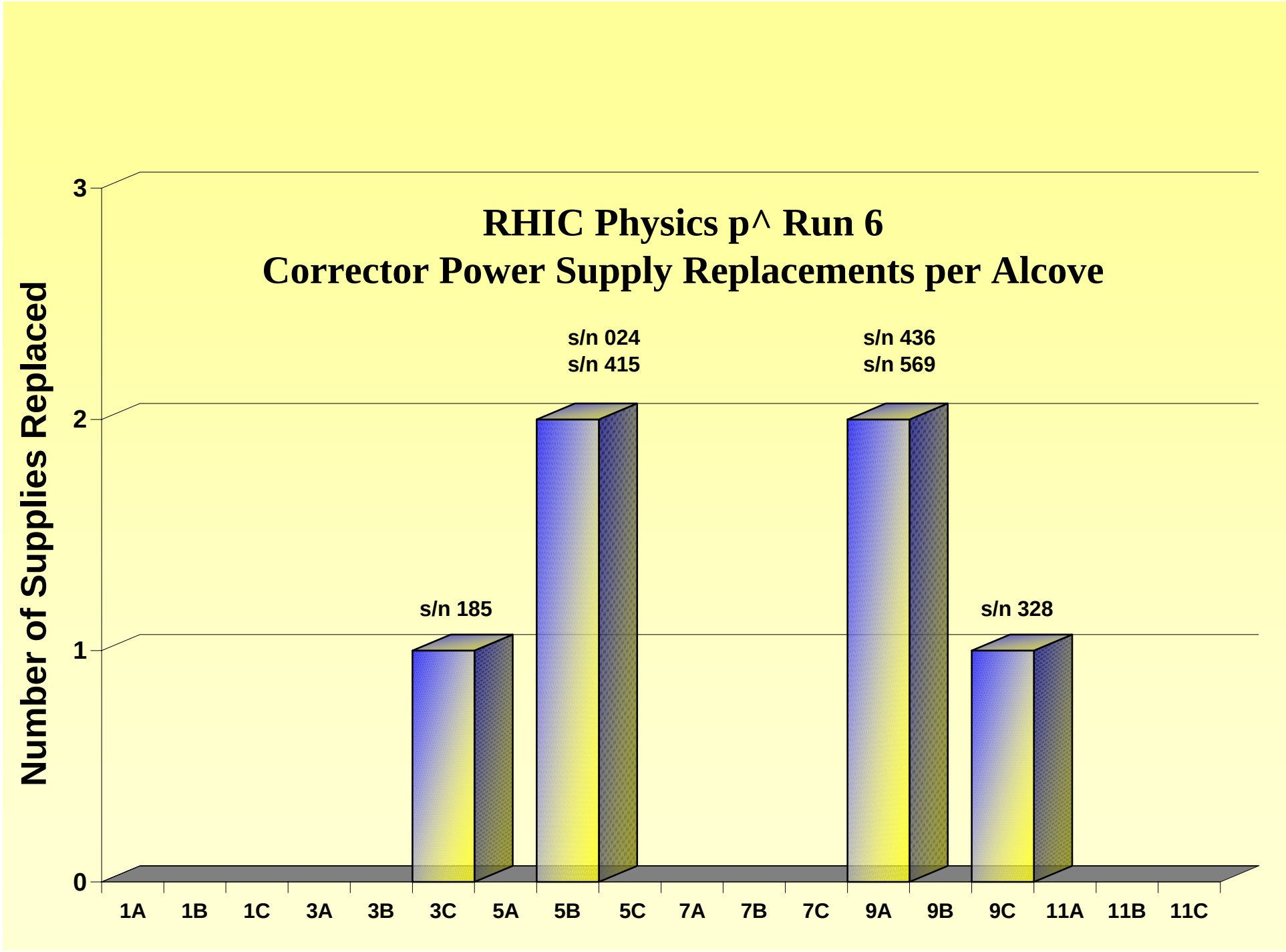
RHIC PHYSICS YEARLY RUN - QLI COUNTERS

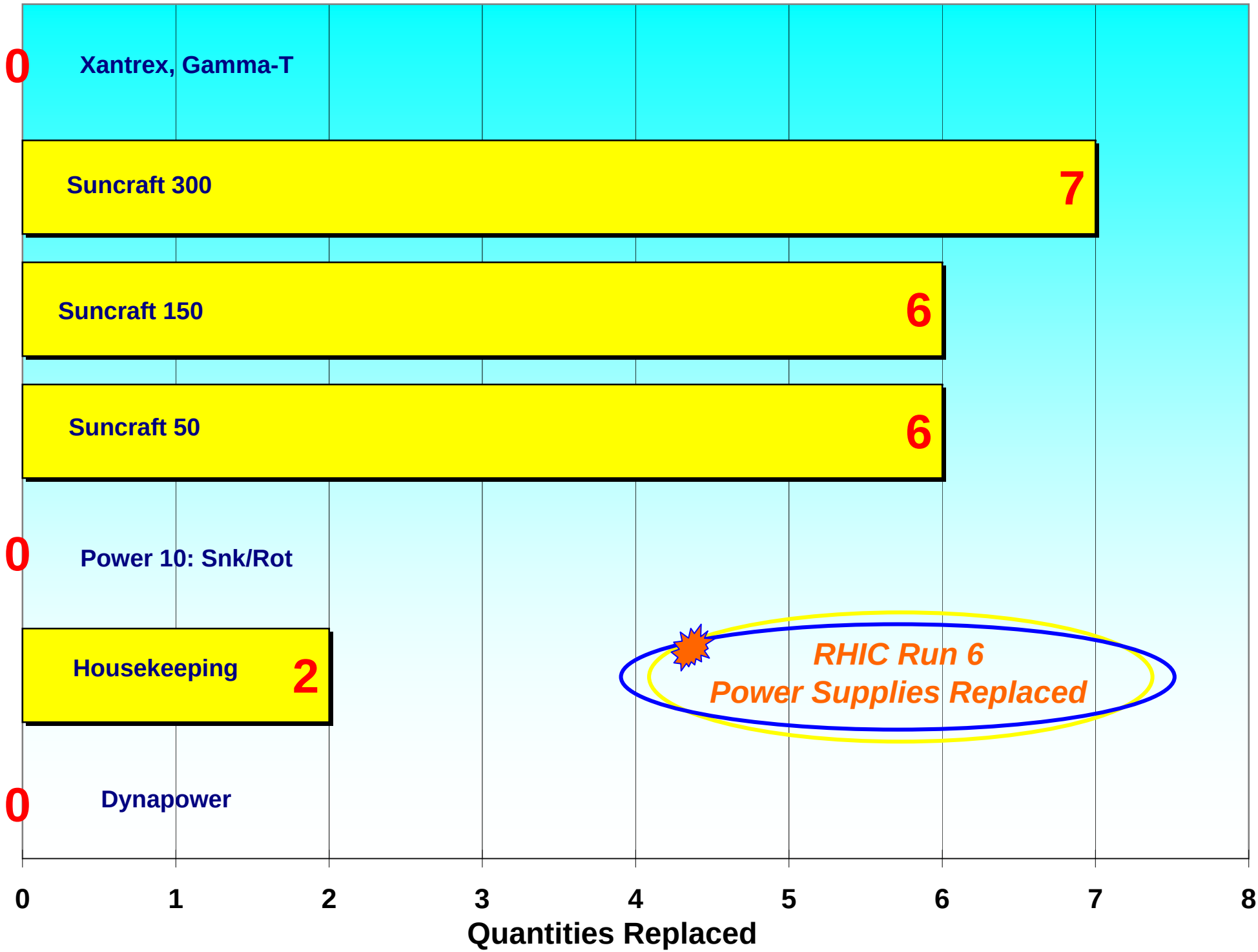
Main QLI Faults	RUN #	Run 2	Run 3	Run 4	Run 5	Run 6
Beam Induced	Runs 1 & 2	46	69	54	37	18
Quench Detector Faults	No Data	13	29	13	20	2
Quench Detector / Controls CFE	Available	New Field added starting with Run 6				10
IR Supply Faults		100	44	24	51	29
QPA Faults		40	6	9	6	5
Main PS (Total) Faults		68	38	46	6	14
Controls 6B Yellow Permit Fail		25	9	24	0	0
Controls Related		20	15	20	13	5
Operations Error		34	15	17	12	4
Cryo Related		6	9	2	4	2
Power Failure		10	8	3	7	9
Other		27	27	24	29	9
Power Supply Induced Quench		6	1	4	0	0
Totals:	1197	395	270	240	185	107

Snake / Spin Quench Faults	RUN #	Run 2	Run 3	Run 4	Run 5	Run 6
Beam Induced	Runs 1 & 2	20	17	5	2	3
Controls Related	No Data	New Field added starting with Run 6				9
Quench Detector Faults	Available	0	0	1	0	2
Quench Detector / Controls CFE		New Field added starting with Run 6				1
Power Supply Faults		10	2	4	0	1
QPA Faults		0	0	0	0	0
Operations Error		2	0	2	1	2
Cryo Related		2	0	1	3	3
Power Failure		0	0	2	2	9
Other		2	6	0	5	0
Totals:	119	36	25	15	13	30

AGS Cold Snake Quench Faults	RUN #				Run 5	Run 6
Beam Induced					0	0
Controls Related		First Cryogenic Magnet Installed into the			0	0
Quench Detector Faults		AGS Accelerator Ring!			0	0
Quench Detector / Controls CFE		Commissioning Run March 30, 2005 (Run 5)			0	2
Power Supply Faults					13	9
QPA Faults					0	1
Operations Error					9	3
Cryo Related					0	0
Power Failure					0	1
Other					0	0
Quench Heaters					0	1
Totals:	39	0	0	0	22	17

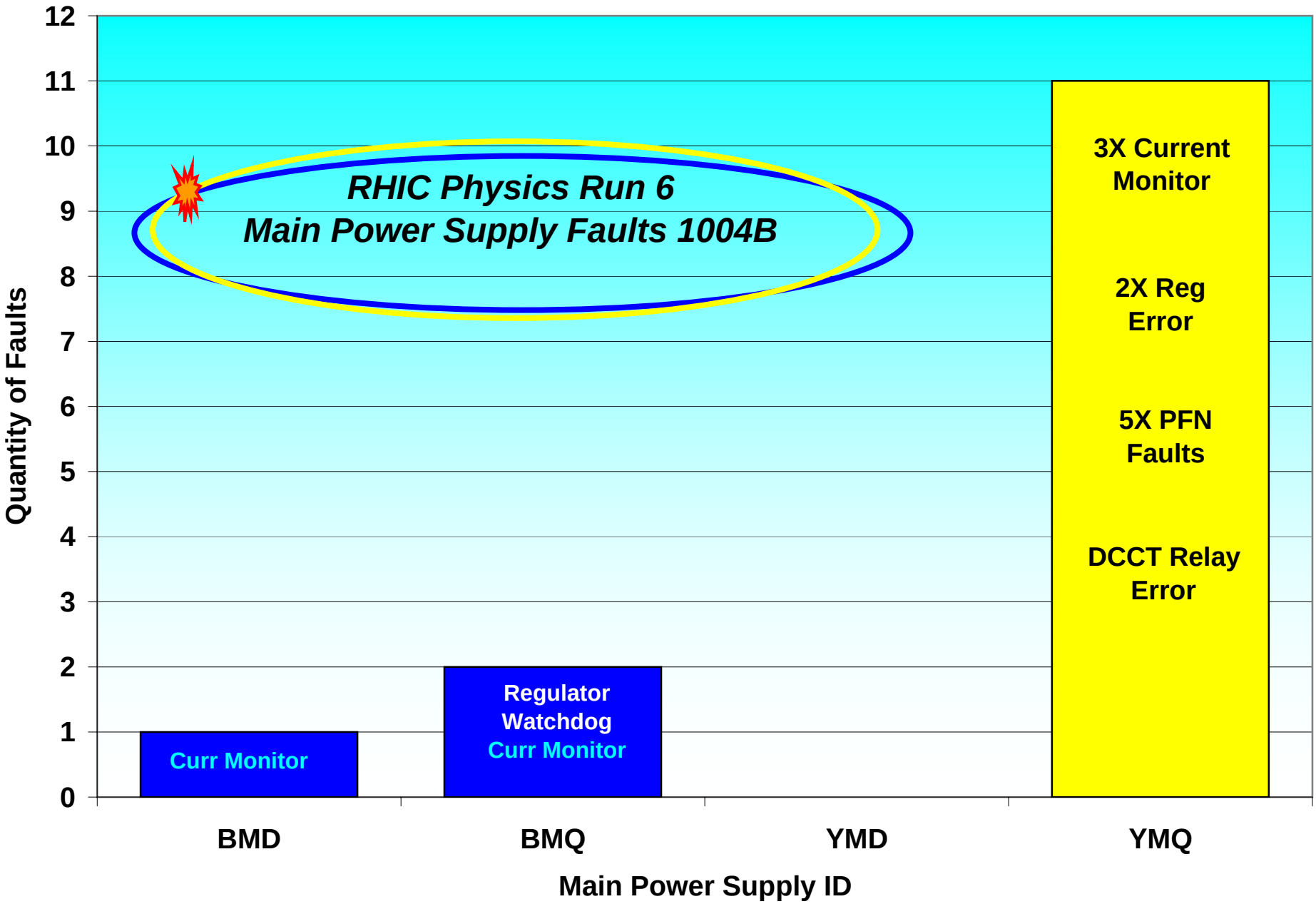

RHIC Physics Run 6
Corrector Power Supply
by Run Comparison Replacement Chart
Run 3
60 Units Replaced
Run 6
6 Units Replaced
Week 11 to 12 Unscheduled Shutdown due to Breaker Failure at the STAR Experiment
Run 4
25 Units Replaced
Run 5
10 Units Replaced
Run 5; First 3 weeks unscheduled down time after Data started due to a Magnet Failure in the Main Ring.
Number of Supplies Replaced
Number of Weeks
0
10
20
30
40
50
60
70
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30


RHIC Physics p^ Run 6
Corrector Power Supply Replacements per Alcove
Number of Supplies Replaced
3
2
1
0
s/n 024
s/n 415
s/n 436
s/n 569
s/n 185
s/n 328
1A
1B
1C
3A
3B
3C
5A
5B
5C
7A
7B
7C
9A
9B
9C
11A
11B
11C


0
Xantrex, Gamma-T
Suncraft 300
7
Suncraft 150
6
Suncraft 50
6
0
Power 10: Snk/Rot
Housekeeping
2
0
Dynapower
RHIC Run 6
Power Supplies Replaced
0
1
2
3
4
5
6
7
8
Quantities Replaced

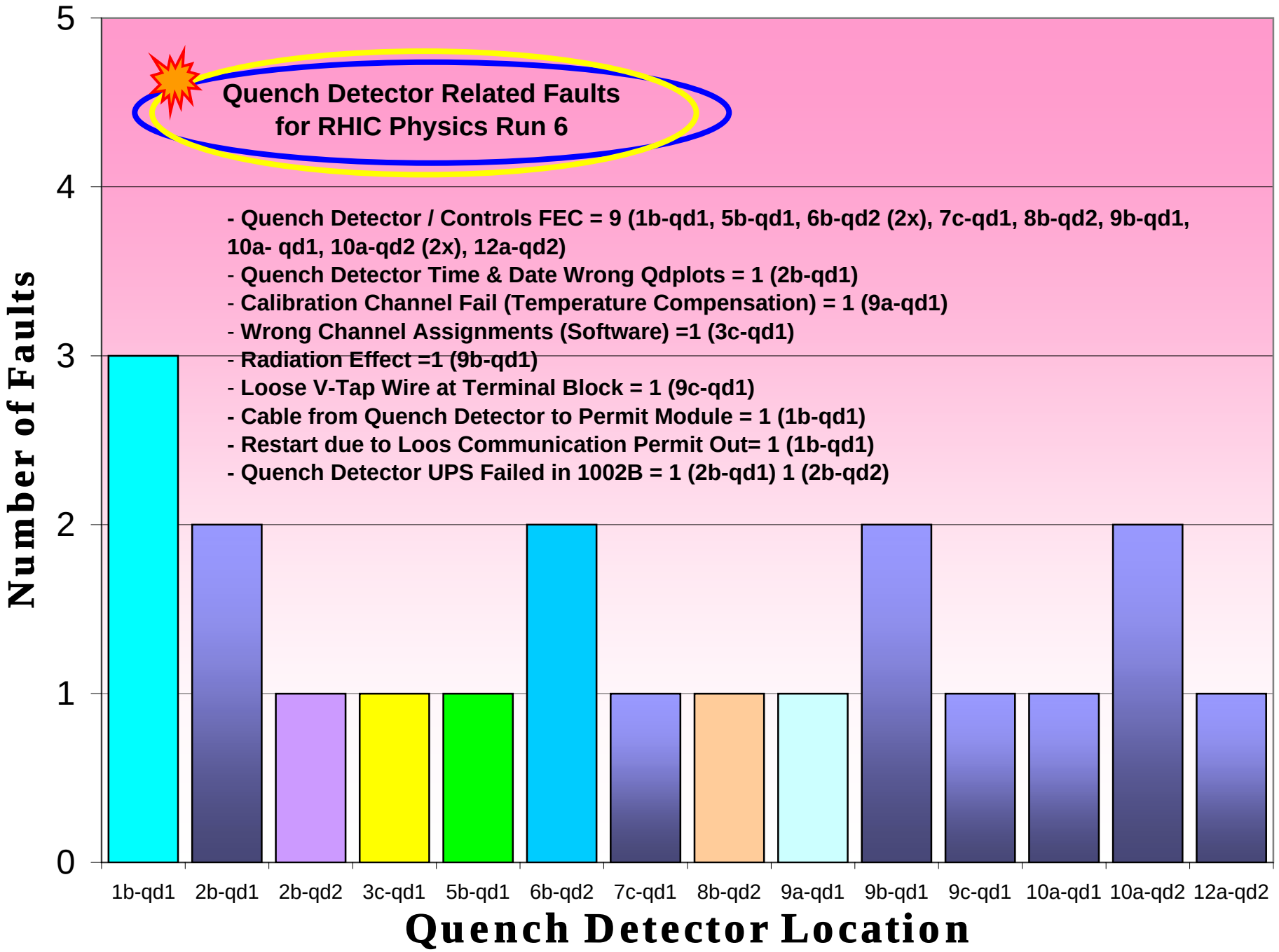
RHIC PHYSICS YEARLY RUN - QLI COUNTERS

6-Feb-06					
15-Feb-06					
18-Feb-06					
13-Mar-06					
16-Mar-06					
19-Mar-06					
4-Apr-06					
5-Apr-06					
3-May-06					
10-May-06					
11-May-06					
12-May-06					
22-May-06					
2-Jun-06					
8-Jun-06					
8-Jun-06					
10-Jun-06					
10-Jun-06					


RHIC Physics Run 6
Main Power Supply Faults 1004B
Quantity of Faults
12
11
10
9
8
7
6
5
4
3
2
1
0
Curr Monitor
Regulator
Watchdog
Curr Monitor
3X Current
Monitor
2X Reg
Error
5X PFN
Faults
DCCT Relay
Error
BMD
BMQ
YMD
YMQ
Main Power Supply ID

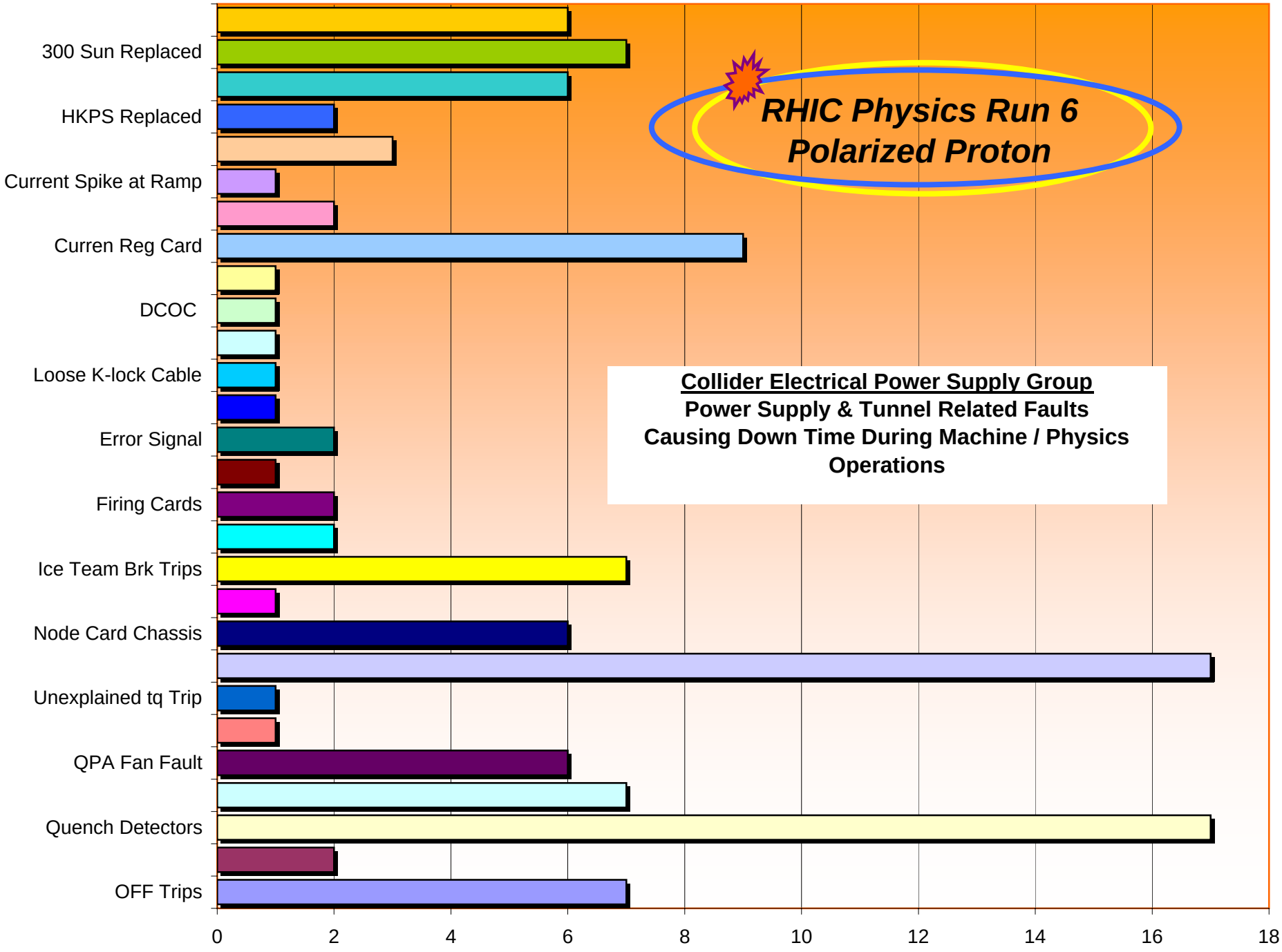
RHIC PHYSICS YEARLY RUN – QLI COUNTERS

Date	Time	I-dent	QLI Ref:	Analysis of Main Power Supplies 1004B	Fault ID
31-Mar-06	22:37:15	YMQ	PR-012	2006-Mar-31 22:37:00 A Yellow QLI has occurred while the Yellow magnets were sitting at injection field. 2006-Mar-31 22:45:00 C. Schultheiss is investigating the cause of the Yellow QLI from home. We received an alarm for y-qmain Reg DCCT. 2006-Mar-31 23:00:00 Carl reports that the y-qmain DCCT error is clear. He will watch from home while we attempt to recover the Yellow quench link. Don has asked that we wait to do this until after the Blue line has been recovered. (DCCT Relay Error)	DCCT Reg
4-May-06	18:50	BMQ	PR-036	20:19 Preliminary analysis here shows the blue main quad moving before t=0. I think this caused this blue qli. A more detailed analysis will follow to confirm. -Don Bruno [rhic] [ps] 23:35 Blue main quad had a Reg. watch dog fault. Some thing in the main quad current regulator faulted and caused the RTDL main quad current to go to zero. -Ganetis [ps quench]	Reg Watchdog
26-May-06	9:47:32	YMQ	PR-045	11:03, The error was the Yellow Quad PFN circuit #1. Investigation after the trip showed the PFN circuit charged up normally and all the ancillary circuits were working. The connections to the PLC input module were tightened. –CS	Yellow Main Quad PFN Circuit #1
16-Jun-06	1:53:08	YMQ	PR-061	The 24 Volt to the PLC Remote I/O in the Hot Box was momentarily lost causing the Regulator to go Low, indicating a Quench. The Regulator then Shut-off the drive to the Power Module SCR's and the Current coasted through the last pair ON, slowly decaying until the Regulator pulled the Link on a Regulator Error.	Reg Error
17-Jun-06	2:36:10	y-qmain	PR-063	Jun-19-2006 10:33 This is very similar to the June 16 QLI Event at 01:53:08 when the Yellow Main Quad power supply's current begins to drift down and the voltage goes into a Sine Wave of 193V Peak to Peak. As Carl Schultheiss had explained to me the last time this occurred, "by looking at the Cold Box Temperature Signals, there was a momentarily loss of 24 volts to the PLC Remote I/O in the Hot Box. This momentarily lost caused the Regulator to go Low, indicating a Quench. The Regulator then Shut-off the drive to the Power Module SCR's and the Current coasted through the last pair ON, slowly decaying until the Regulator pulled the Link on a Regulator Error". Since this 24 volt signal comes back on its own (a possible loose connection) the Recovery can be made without problem but Carl has to reset the software for the Temperature Signals to continue to record data. -G. Heppner [rhic] [quench]	Reg Error
22-Jun-06	3:25:21	y-qmain	PR-067	2006-Jun-22 03:25:00 Development is off. A Yellow quench link interlock occurred during a ramp to to energy, though the beam in Yellow had been lost much earlier (when the RF loops closed). 2006-Jun-22 03:45:00 C. Schultheiss was contacted, since the QLI appeared to be triggered by the y-qmain power supply. Carl reports that there was a current monitor fault. Quench recovery has begun. 2006-Jun-22 04:03:00 Machine Development. RHIC injection has resumed.	Current Monitor Fault
22-Jun-06	4:14:34	y-qmain	PR-068	2006-Jun-22 04:14:00 Development is off. Another Yellow QLI occurred under the same conditions. 04:32 Both Carl Schultheiss and Fred Orsatti are coming in to repair the y-qmain problem. -jpj, vhs, csa yun 06:27 A problem with y-qmain exists that Carl believes we can live with for the remainder of the run. He and Fred have disabled the current monitoring in software in order to allow us to continue with the development work, and will discuss the issue with other Power Supply people during the daytime. -jpj, vhs, csa	Current Monitor Fault
24-Jun-06	Ops Log	y-qmain	PR-079 (3X)	2006-Jun-24 16:30:00 C. Schultheiss and F. Orsatti are coming in to investigate a problem with the Yellow main quads. The main quads have pulled the yellow quench link 3 times this shift (PFN Faults) well after the power dips had subsided. 2006-Jun-24 20:28:00 Carl and Fred are preparing to replace a bad PFN relay on the power supply relay board for the y-qmain power supply. 2006-Jun-24 21:56:00 Carl reports that the repair is complete. Running Yellow quench recovery. 2006-Jun-24 22:14:00 Quench recovery has failed. Carl and Fred are reviewing the y-qmain problem again. 2006-Jun-24 23:03:00 Running Yellow quench recovery again. 2006-Jun-24 23:17:00 Quench recovery is complete. Carl reports that a loose wire the supplies -15V to the sensing circuit for PFN1 was tightened. The relay replaced earlier was probably not the cause of the problem. (Major Power Dips for the Weekend)	PFN (3X)
25-Jun-06	3:46:32	y-qmain	PR-081	2006-Jun-25 03:46:00 Another Yellow quench link interlock has occurred, most likely caused by a PFN fault on the y-qmain power supply. 2006-Jun-25 04:10:00 Carl is coming in again to investigate. 2006-Jun-25 04:30:00 Fred is coming in again. 2006-Jun-25 06:35:00 Starting quench recovery. 2006-Jun-25 06:50:00 Quench recovery has failed. Carl and Fred are continuing their work. 2006-Jun-25 07:00:00 C. Schultheiss and F. Orsatti are working on repairing the cause of multiple QLI's in the Yellow ring. 2006-Jun-25 11:37:33 C. Schultheiss and F. Orsatti was not able to determine the root cause of the numerous yellow QLI's	PFN
25-Jun-06	7:05:41	b-qmain	PR-082	While Carl and Fred where working on the Yellow Main Quad PFN Fault, the Blue Main Quad tripped on a Regulator Error. Talking to Carl, he has no idea since they where not working near this system.	Reg Error
25-Jun-06	13:27:16	y-qmain	PR-083	The PLC was accidentially reloaded with the old software. It was several hours after recovery when this QLI Event occurred. Carl had to go into the software and make the changes to the newer version. C. Schultheiss	Current Monitor
26-Jun-06	6:57:20	b-dmain	PR-085	15:52 This Blue QLI Event was caused by the Blue Main Dipole power supply. A Current Monitor Fault developed during the switchover between Flattop and Ramp. -G. Heppner [rhic] [quench]	Current Monitor


Quench Detector Related Faults
for RHIC Physics Run 6
- Quench Detector / Controls FEC = 9 (1b-qd1, 5b-qd1, 6b-qd2 (2x), 7c-qd1, 8b-qd2, 9b-qd1, 10a- qd1, 10a-qd2 (2x), 12a-qd2)
- Quench Detector Time & Date Wrong Qdplots = 1 (2b-qd1)
- Calibration Channel Fail (Temperature Compensation) = 1 (9a-qd1)
- Wrong Channel Assignments (Software) =1 (3c-qd1)
- Radiation Effect =1 (9b-qd1)
- Loose V-Tap Wire at Terminal Block = 1 (9c-qd1)
- Cable from Quench Detector to Permit Module = 1 (1b-qd1)
- Restart due to Loos Communication Permit Out= 1 (1b-qd1)
- Quench Detector UPS Failed in 1002B = 1 (2b-qd1) 1 (2b-qd2)
Number of Faults
0
1
2
3
4
5
1b-qd1
2b-qd1
2b-qd2
3c-qd1
5b-qd1
6b-qd2
7c-qd1
8b-qd2
9a-qd1
9b-qd1
9c-qd1
10a-qd1
10a-qd2
12a-qd2
Quench Detector Location

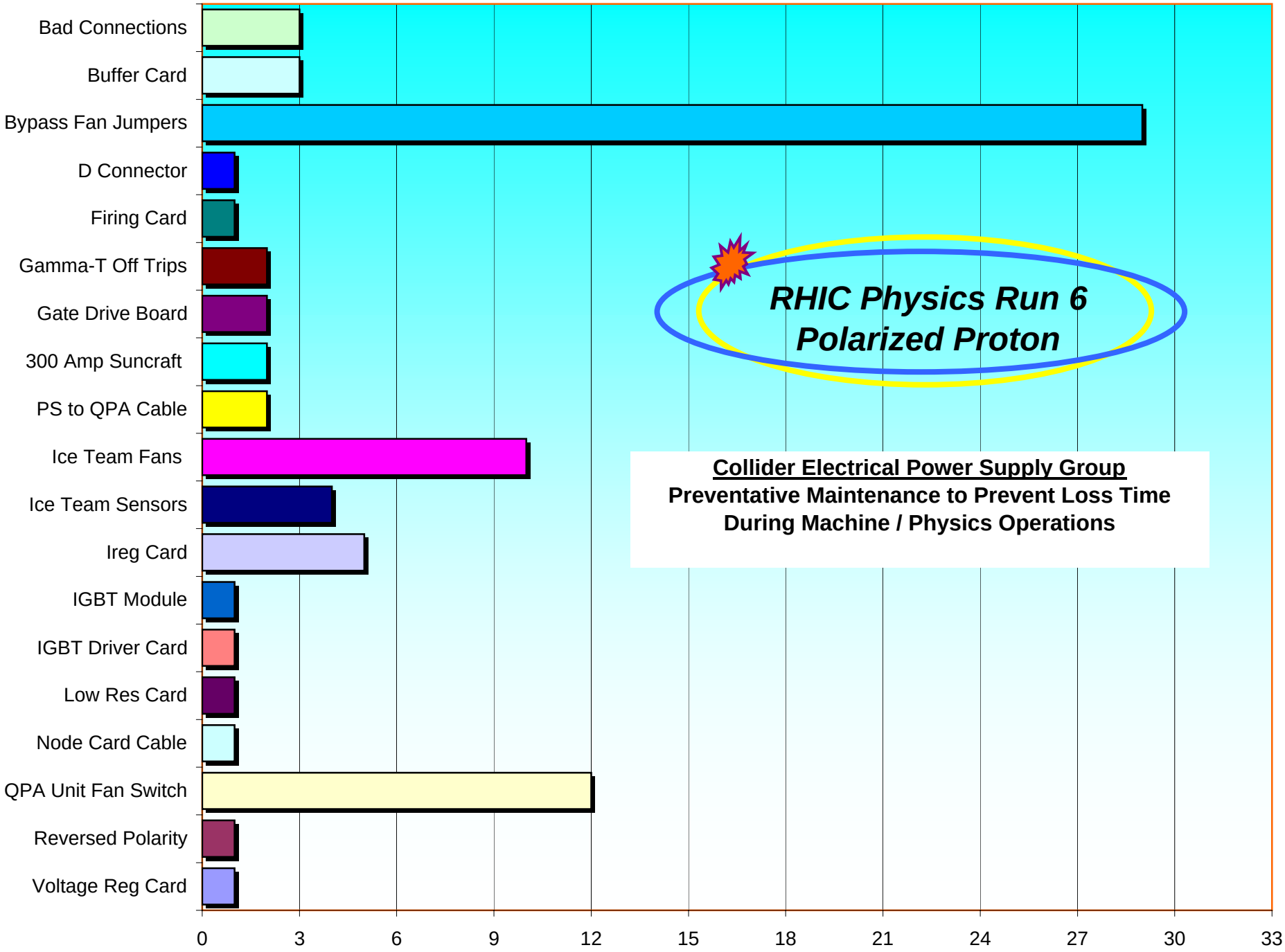
RHIC PHYSICS YEARLY RUN - QLI COUNTERS

Date	Time	I-dent	Loc.	QLI Ref:	Analysis of Quench Detectors	Fault ID
20-Feb-06	12:19:43	cfe-10a-qd2	10A	MS-010	2006-Feb-20 12:01:00 cfe-10a-qd2 reports a no heartbeat fault on the alarm display. 2006-Feb-20 12:06:00 While trying to reset the FEC 10a-dq2 fit request that Quench Detection personnel be contacted first. 2006-Feb-20 12:22:00 resetting cfe-10a-qd2 after consulting with G. Ganetis. 2006-Feb-20 12:25:00 The Yellow Quench link was pulled as a result of resetting the Quench Detection FEC.	Quench Detector / Controls FEC
21-Feb-06	23:41:00	3c-qd1	3C	George Noticed	2006-Feb-21 23:41:00 G. Ganetis calls to report a problem with the quench protection for the snakes in the 3C alcove. He will require ~1 hour to diagnose and repair the problem from home. This work will include change the snake currents, preventing us from injecting into RHIC. 01:01 I have found a problem with channel assignments in the 3c-qd1 quench detector. The initial testing should have found this but it did not. The problem was corrected and now all the signals are correct. -Ganetis	Software Channel Assignments
22-Mar-06	18:10:57	cfe-7c-qd1	7C	PSQ-001	2006-Mar-22 17:56:00 Communications have been lost with cfe-7c-qd1. 2006-Mar-22 18:05:00 APEX is off. We unecessarily ramped the RHIC magnets to zero before resetting the FEC. Only rotators are on the 7c-qd1, so the permit would only been down while the rotators were tripped on a quench due to the quench detector FEC reboot. Mar-23-2006 14:23 The Power Supplies for these magnets where at Idle Current (less then 1 amp) therefore the magnets did not quench. All four (4) Rotators had tripped due to the cfe-7c-qd1 reboot as per MCR. -G. Heppner [rhic] [quench]	Quench Detector / Controls FEC
22-Mar-06	14:54:53	9c-qd1	9C	PSQ-002	There was a loose gas cooled lead voltage tap wire on bl9-snk7-2.3 that caused this snake magnet to quench at 14:54. Dan Oldham went into investigate, along with Wing Louie and Gregg Heppner, and Dan found the loose wire. It was repaired and he checked all the other wires while we were down there. -Don Bruno [blue] [quench] Detailed Info: TB2-3, positive lead Voltage Tap Wire BI9SNKTB3_GL located at the Quench Detector in Alcove 9C, Din Rail Patch Panel was not properly secured. The Screw terminal was found fully tightened but the wire somehow was never properly positioned into this connector and was found to be just making physical contact. This caused the Quench Detector to Fire, tripping both magnets at Operating Current. First bl9-snk7-2.3 Quenched and approximately 2.16 seconds after, heated gas caused bl9-snk7-1.4 to quench. G. Heppner	Gas Cooled Lead BI9SNK7B3_GL Faulty Wire Tap
23-Mar-06	15:18:20	cfe-5b-qd1	5B	PR-005	16:35 We had to reboot a front end, cfe-5b-qd1, due to a response failure indication that occurred during the physics store. This caused the quench links to drop. In the meantime, during the access into RHIC, two snake suffered a real quench: bl9-snk7-2.3 and 1.4. The fault was caused by a faulty voltage tap for a gas-cooled lead to the snakes, and has caused elevated temperatures around the ring. We await clearance from Cryo before proceeding with recovery. -LH Blue Recovery Completed at 16:51:11 and Yellow Recovery Completed at 17:03:00. Sextupole Magnets in 5B required Re-training since the Quench Detector 5b-qd1 was reset and was done by MCR Personel - G. Heppner	Quench Detector / Controls FEC
24-Mar-06	19:02:52	cfe-8b-qd2	8B	PR-006	2006-Mar-24 18:17:00 Front end 8b-qd2 shows a response failure. fit indicates that a reboot of the front-end is required. We contact W. Louie for assistance. W. Louie confirms that front-end 8b-qd2 will require a reboot. He asks us to confirm the situation with L. Hoff. We leave a message for L. Hoff. W. Louie requests that we contact J. Gould to assess the network traffic for front-end 8b-qd2. Wing suggested that that the volume of network traffic at the front end may account for its failure and the failure of 5b-qd1 yesterday. We are preparing to reboot the 8b-qd2 FEC. We must ramp the magnets in RHIC to zero current. Rebooting cfe-8b-qd2. 2006-Mar-24 19:34:44 Quench link for yellow is recovered. We begin hysteresis ramp. 2006-Mar-24 19:46:00 Hysteresis ramp is complete.	Quench Detector / Controls FEC
25-Mar-06	23:45:00	cfe-12a-qd2	12A	PR-008	23:45 Quench Link Interlock in Yellow ring First input dropped was 12a-ps1.A (23:45:00 1681663) First upstream carrier drop was 4b-time.A (23:45:00 1681664) -Sequencer 23:45 Beam Abort, 12a-ps1.A dropped Yellow Quench -Sequencer 23:59 This quench is happened because we had to reboot cfe-12a-qd2. -NAK	Quench Detector / Controls FEC
31-Mar-06	16:31:36	9b-qd1	9B	PR-009	2006-Mar-31 16:40:00 QLI in blue and yellow. Cryo is checking their equipment. MCR is ramping down the magnets and preparing for access to replace cfe-7a-ps2: CAS will assist J Pepe in the replacement. 2006-Mar-31 16:45:00 Sequencer reports 16 real magnet quenches on quadrupoles and dipoles in both blue and yellow ring. G Ganetis reports that the quench detector appears to have suffered from radiation upset and is reporting bad quench data. Cryo control reports no heat or pressure spikes, 2006-Mar-31 17:32:00 D Bruno has restored the blue links. Yellow will wait until 7a-ps2 is back up. 2006-Mar-31 18:24:40 cfe-7a-ps2 is back up. Running yellow quench recovery.	Radiation Effect
7-Apr-06	15:15:57	2b-qd1 Aux	2B	PS Fail	For the bi1-sq6-ps trip, Qdplots time and date are incorrect for this event. {qd02_04052006_220537_02_A.dat:Blue Aux 2 Quenched [SignalB1TQ6_VT Int 1]@04/05/2006 22:05:37 [rhicMode: CUCU1]} was indicated when the actual date was 04/07/2006 and the Time of the Event was 15:15:57. George Ganetis was notified and looked into the issue. The Plots for the wrong Date and Time are the ones to use.	Wrong Time and Date Transfer
9-Apr-06	1:32:24	cfe-6b-qd2	6B	PR-020	Sequence of Events: 2006-Apr-08 22:28:53 Cryo control reports that they have lost communication with lead flows in the 6 o'clock sector. They request that the capClient server be restarted. 2006-Apr-08 22:40:00 Cryo reports that they are continuing to have communications difficulties. The problem is related to the response failure indication from cfe-6b-qd2. The front-end will require a reboot in order to restore communication. We leave a message for L. Hoff and then call G. Ganetis for assistance. 2006-Apr-08 23:10:48 G. Ganetis has called the cryo control room and determined that the refrigerator system is stable and will tolerate continued operation in this state until the front-end 6b-qd2 can be reset. We will reset the computer at the end of the present store. 2006-Apr-09 01:00:00 RHIC physics ends. 2006-Apr-09 01:28:24 Beam is aborted in RHIC due to a slow loss radiation monitor interlock from g9-lm5. The interlock occurred after we had manually aborted beam in the yellow ring in preparation for measuring the emittance in blue. We ramp down to park to reboot cfe-6b-qd2. 2006-Apr-09 01:33:16 After ramping down to park in RHIC, we reboot cfe-6b-qd2. 2006-Apr-09 01:41:34 Cryo c	Quench Detector / Controls FEC
12-Apr-06	21:41:47	cfe-9b-qd1	9B	PR-026	2006-Apr-12 23:23:58 Summary: Accelerator Beam Experiments ran for 7.5 hours this shift. Afterwards cfe-9b-qd1 was reset which brought down both the Yellow & Blue quench links. Once the quench links were recovered, the sextupoles associated with the 9b alcove had to be retrained. As of the end of shift RHIC has been put through a hysteresis cycle and is being preped for a 111x111_p4 bunch pattern fill.	Quench Detector / Controls FEC
12-Apr-06	23:28:44	cfe-6b-qd2	6B	PR-027	2006-Apr-12 23:30:00 6b-qd2 is now dead. MCR consulted G Ganetis per fit reset instructions; he advises us to go ahead with the reset. Ramping to zero. 2006-Apr-12 23:54:00 Quench links are back up. Hysteresis ramp.	Quench Detector / Controls FEC
13-Apr-06	9:38:40	cfe-1b-qd1	1B	PR-028 / 029	Communications Failure of the cfe-1b-qd1 Quench detector required a Re-boot. It was descided to Re-boot all cfe Quench Detector front ends this time since there has been multiple communications faults with the cfe-qd's including 4 within the last 24 hours. This caused the Blue Ring to quench. G. Heppner	Quench Detector / Controls FEC
16-Apr-06	13:56:49	cfe-10a-qd2	10A	CRYO	2006-Apr-16 13:56:49 Cryo reports that they have lost communication with the 10 o'clock sector. After inspection, we find that cfe-10a-qd2 indicates a no heartbeat condition. After leaving messages for L. Hoff and W. Louie as well as conferring with G. Ganetis, we reboot the FEC, restoring cryo communication with the sector.	Quench Detector / Controls FEC
25-Apr-06	10:23:06	cfe-10a-qd1	10A	PR-032	Alarm Page indicated at 07:44:28: No HeartBeat, response failuer - acnfec303.pbn.bnl.gov. Notified the proper personel. GH 11:23 This Blue Ring QLI was due to a reset of the cfe-10a-qd1 (Item Number 3 of the Automated Analysis). Observation: Both rings had been ramped to zero current and all 4 DX Heaters in 1010A had been fired while the DX Magnet was at low current. -G. Heppner [rhic] [quench]	Quench Detector / Controls FEC
2-May-06	4:15:25	cfe-9a-qd1	9A	PSQ-016	The 9a-qd1 quench detector tripped because of a hardware problem with the temp. compensation channel. I have turned the temp. compensation off in this quench detector for now. -Ganetis [quench] Access required to make repair.	Temp Compensation Channel
3-May-06	9:15:00	cfe-9a-qd1	9A	Ref to PSQ-016	Found Channel 15 of Card 1 (Dual Gain Mux Card) that is responsible for the Temperature Compensation Channel (Calibration Channel) was reading 0.03v when norm operation should have been 0.3v. Replaced Card and restored system back to operation. D. Oldham, W. Louie, G. Heppner	Temp Compensation Channel
1-Jun-06	4:27:43	cfe-1b-qd1	1B	PR-048	06:38 The blue link trip cause looks like an intermittent cable connection between the 1b-qd1 quench detector and the permit module. This should be checked soon. This quench detector is located in the 1B alcove. -Ganetis [blue] [quench]	Other (Cable)
1-Jun-06	9:56:10	cfe-1b-qd1	1B	PR-050	Ref to PR-048, Tunnel access was granted when PR-049 (b-qtrim Toldo Box Failed). Cleaned and inspected K-lock Connections at Cables, Quench Detector and the Permit Module Chassis. Tap test and Wiggle Wire Test all areas that might have affect, could not get another fault. Measured Permit Cables, both indicated Open and then continuity = 1.1 ohms (good). Then, the Output Signals to the Permit Module failed during Analysis and required that the 1b-qd1 Quench Detector be Restarted. Wing Louie & Gregg Heppner	QD Restart
13-Jun-06	8:44:34	cfe-2b-qd1 cfe-2b-qd2	2B	PR-059	10:28 Tom Nolan, Jeff Wilke and Gregg Heppner are swapping out the UPS for the quench detector in 1002B. They will contact WIng Louie when they are done. Wing will get teh quench detectors going and then contact MCR. -Don Bruno [rhic] [ps] 11:35 The Blue and Yellow Link tripped due to a UPS Fail causing a loss in power to the Quench Detection Rack in Building 2B. This loss of power also caused all 4 Dx Magnet Heaters to Fire. -G. Heppner [rhic] [quench]	UPS Fail


RHIC Physics Run 6
Polarized Proton
Collider Electrical Power Supply Group
Power Supply & Tunnel Related Faults
Causing Down Time During Machine / Physics
Operations
300 Sun Replaced
HKPS Replaced
Current Spike at Ramp
Curren Reg Card
DCOC
Loose K-lock Cable
Error Signal
Firing Cards
Ice Team Brk Trips
Node Card Chassis
Unexplained tq Trip
QPA Fan Fault
Quench Detectors
OFF Trips
0
2
4
6
8
10
12
14
16
18

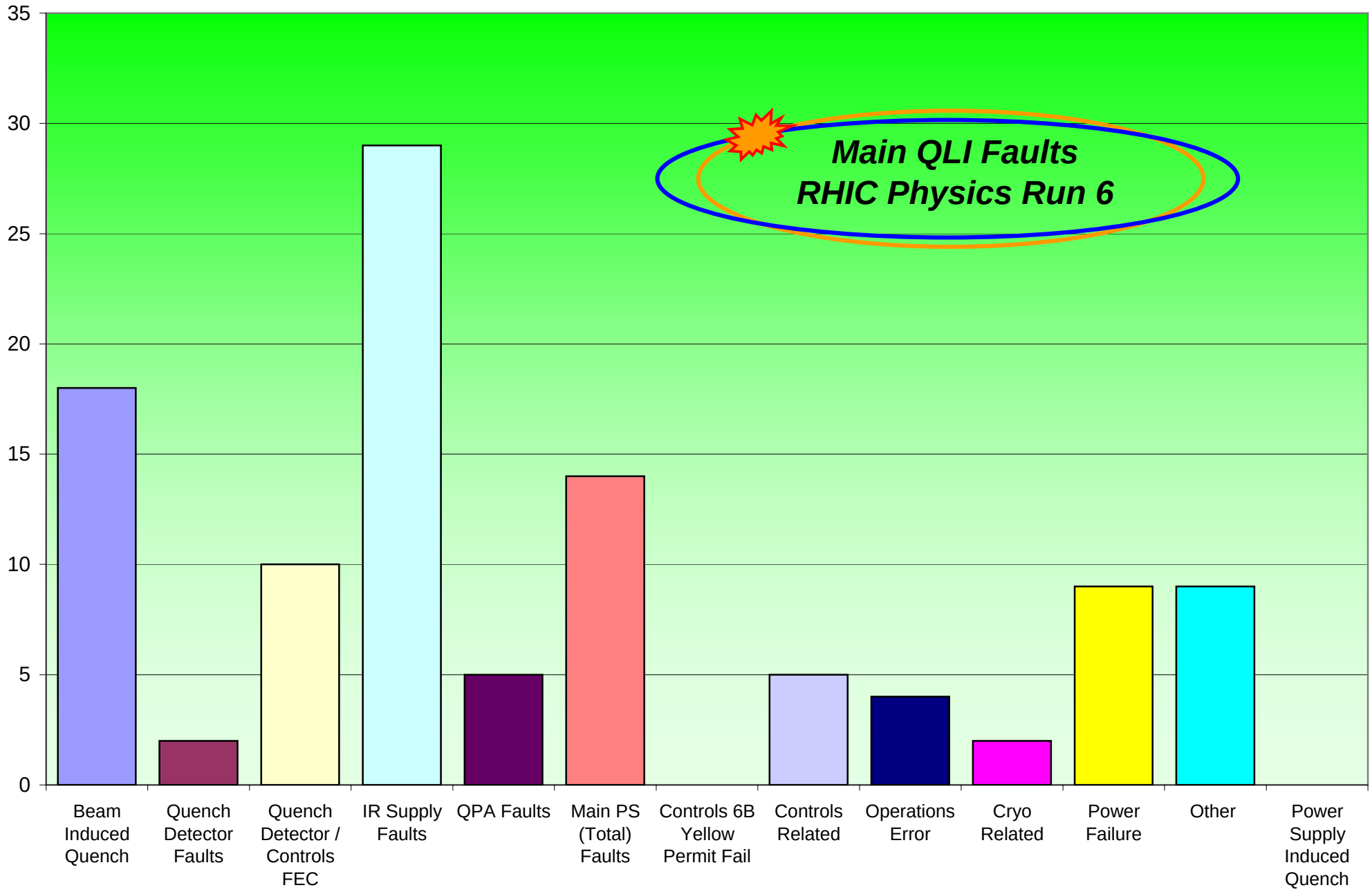
RHIC PHYSICS YEARLY RUN – QLI COUNTERS

Date	Qty	Fault	QLI Ref.	Identification	What Were They?
6-Feb-06	1	OFF	MS-001	h12-sq6	Power Supply h12-sq6 had tripped to the off state. No action taken, TAPE was able to restore for now. During the day, Techs replaced Control Card, Digital Inv Card and the HKPS.
12-Feb-06	1	QPA-PS Cable Fault	MS-003	h6-sq6	Tripped during a ramp
13-Feb-06	1	Toldo Box ID Connector	MS-004	h-qnim	The h-qnim-pv caused this qli. The current readback to the RTDL was bouncing. When we ran the p.s. up again we found this current readback was half of what it should be. Moving the D connector on the toldo box fixed it. Gregg Heppner removed the D connector and cleaned the pins with contact cleaner and brush. -Don Bruno 1pm/13pm
15-Feb-06	1	Sunicraft 300 Replaced	MS-007	y6-sd9	No Report as of this entry 6-23-06
16-Feb-06	1	Corrector PS Replaced	N/L	yo5-cv15	Tripped on Off / Error. Tech found a solder connection that was missing solder from the factory!
20-Feb-06	1	DCOC	MS-009	y16-qf3	From the Logs: PS status - state: 50hy-Error status: AC Power, Standby, Remote, DC Overcurrent, Quench. DC Current was steady at the time so the DC Overcurrent appears to be false. It was looked at during the day from Experts (Don Bruno and Joe Drozd) and they checked the electrical path connections. Also they reseated the J12 D Connector at the back of the backplane board. Nothing obvious, they swapped out the Voltage Regulator Card because this is where the DC Overcurrent Circuit is locate
20-Feb-06	1	cfe-10a-qd2	MS-010	Quench Det	Communications Loss with cfe-10a-qd2,
21-Feb-06	1	cfe-3c-qd1	George	Quench Det	Wrong Software Channel Assignment
21-Feb-06	1	Ice Team Brk Trip	N/L	Breaker	TQ1 Brk #4, Sector 6 Retaners
23-Feb-06	1	Current Reg Card	MSQ-003	h5-vsr2-2-3	Scratchy Iref Signal causing current to follow tripped supply on errr
26-Feb-06	1	QPA-PS Cable Fault	MS-015	h15-qf3	Power Supply caused a QLI but there where no faults on the QPA or the Power Supply
26-Feb-06	1	Crowbar	MS-014	h39-db0	Voltage Spikes seen on the PS
28-Feb-06	1	Ice Team Sensor Fail	N/L	Y10-17TB	Sensor Failed 0D000000031FCBD12Freplaced with ID # 8A0000004729BE2I
13-Mar-06	1	Sun 150 Replacement	N/L	h1-sq6	Power Supply Voltage went to zero
16-Mar-06	1	Corrector PS Replaced	N/L	yo8-cv5	Tripped on an Over Voltage
16-Mar-06	1	Buffer Card	PR-002	ho10-db0	Tripped the 4-20Ma quench detector, replaced as per George Ganetis
18-Mar-06	1	Fiber Optics Card	PR-003	ho10-sq7	Supply suddenly set fed to the top and would rail the supply then after when trying to recover from the trig
19-Mar-06	1	Sun 150 Replacement	N/L	h12-sq4	No Current Output
22-Mar-06	1	cfe-7c-qd1	PSQ-001	Quench Det	Communications Loss with cfe-7c-qd1
23-Mar-06	1	cfe-9c-qd1	PSQ-002	Quench Det	Faulty Wire Connection 8HNNK7B3_GJ
23-Mar-06	1	cfe-2b-qd1	PR-005	Quench Det	Communications Loss with cfe-2b-qd1
24-Mar-06	1	cfe-8b-qd2	PR-006	Quench Det	Communications Loss with cfe-8b-qd1
24-Mar-06	1	cfe-12c-qd2	PR-008	Quench Det	Communications Loss with cfe-12c-qd2,
31-Mar-06	1	cfe-8b-qd1	PR-009	Quench Det	Radiation Effects disrupt cfe-8b-qd1
31-Mar-06	1	Firing Card	PR-010	yo8-dq3	Power Supply Oscillations
31-Mar-06	1	QPA Fan Fault	PR-011	ho3-qd7	Fan Fault, switches
31-Mar-06	1	DCCT	PR-012	YMQ	DCCT Relay Error (Carl Schuhbeiss
31-Mar-06	1	Firing Card	PR-013	y8-qs6	Power Supply Oscillations
2-Apr-06	1	QPA Fan Fault	PR-035	y8-q6	Fan Fault, replaced Fan Unit
4-Apr-06	1	Sunicraft 300 Replaced	Beam Abort	y12-qf9	Voltage Unstable, caused beam to become unstable
5-Apr-06	1	Corrector PS Replaced	MCR	yo8-cv7	Over Temp / Over Voltage
7-Apr-06	1	Current Reg Card	N/L	h11-sq6	Oscillation, Tap test proved Current Reg Card to be fault
8-Apr-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q2 Brk #1, Sector 1 Tree Heaters
5-Apr-06	1	cfe-6b-qd2	PR-020	Quench Det	Communications Loss with cfe-6b-qd2,
12-Apr-06	1	cfe-9b-qd1	PR-026	Quench Det	Communications Loss with cfe-9b-qd1
12-Apr-06	1	cfe-6b-qd2	PR-027	Quench Det	Communications Loss with cfe-6b-qd2
13-Apr-06	2	cfe-1b-qd1	PR-028 / 029	Quench Det	Communications Loss with cfe-1b-qd1
16-Apr-06	1	cfe-10a-qd2	CRYO	Quench Det	Communications Loss with cfe-10a-qd2 during Unscheduled shutdown due to Breaker Fail at 1000
23-Apr-06	1	Error Signal	PR-031	yo1-qd3	yo1-qd3-ps Error Fault
25-Apr-06	2	cfe-10a-qd3	PR-032	Quench Det	Communications Loss with cfe-10a-qd1,
25-Apr-06	1	QPA-PS Cable Fault	PR-033	h14-qf3	h14-qf3-ps QPA to PS Cable Fail
30-Apr-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q1, Brk #9, Sector 5 Retainers
1-May-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q2, Brk #9, Sector 5 Retainers
1-May-06	1	50 Amp Corrector PS	N/L	yo4-cv17	Tripped to the Off State
2-May-06	1	50 Amp Corrector PS	N/L	yo5-cv17	Tripped to the Off State
3-May-06	1	Corrector PS Replaced	MCR	yo4-cv17	Tripped to the Off State
3-May-06	1	cfe-9a-qd1	PSQ-016	Quench Det	9a-qd1 Quench Detection Hardware (Temperature Compensation Chanes
3-May-06	1	50 Amp Corrector PS	N/L	yo5-cv17	Loose AC Connection at the Rear of the Supply
4-May-06	1	Rpm Watchdog	PR-036	BMQ	Blue main quad Reg. watchdog fault, caused the RTDL main quad current to go to zero.
4-May-06	1	Current Spikes	PR-037	h6-q6	Current Spikes during the top of the Store Ramp
4-May-06	1	Current Reg Card	MCR	ho11-sq41	Range Error Fault, Current Reg Card Bad Relay
6-May-06	2	QPA Fan Fault	PR-041 / 042	h9-qf1	QPA Fan Fault tripping the Link 2X (Support Installa
6-May-06	1	QPA-PS Cable Fault	PR-043	ho3-qd7	ho3-qd7-ps QPA to PS Cable Fail
6-May-06	1	50 Amp Corrector PS	N/L	h8-dsd2	Tripped on Over Temp
10-May-06	1	Corrector PS Replaced	MCR	h8-dsd2	Tripped on Over Temp on 5/6/06, MCR could not reset so they steered around until Maintenance Da
10-May-06	1	Ice Team Sensor Fail	N/L	Y10-02TB	Sensor Failed 0C0000003FA01920replaced with ID #: 32000000388C2F2I
11-May-06	1	Corrector PS Replaced	MCR	yi3-6V5	Tripped on Error, could not run negative direction
11-May-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q2 Brk #1, Sector 1 Tree Heaters (Replaced Thermostat at YQ2
11-May-06	1	Sunicraft 150 Trips OFF	N/L	h12-sq4	NOTE: Power Supply (s/n 084) was working fine and had no problems but Wolfram wanted it swapped out because it was in the yellow ring last year and now blue ring is noisy. The new power supply (s/n 006) is tripping to the OFF state.
11-May-06	1	Sunicraft 150 Trips OFF	N/L	h12-sq4	NOTE: Power Supply (s/n 084) was working fine and had no problems but Wolfram wanted it swapped out because it was in the yellow ring last year and now blue ring is noisy. The new power supply (s/n 006) is tripping to the OFF state.
12-May-06	1	Sunicraft 150 Replaced	N/L	h12-sq4	S/N 006 was tripping to the OFF State too many times and was replaced
19-May-06	1	Loose D Connector	N/L	yi10-sq4	The remote p.s. status is flashing between an OFF state and a "No p.s." state. CAS discovered the 25 pin D Connector (Nude Card Cable) was loose at the power supply.
19-May-06	1	Unexplained ie Trip	N/L	hp10-sq4	AT 23:28 the quench detector stripped it but there is no snapshot to go along with it and I don't know why. I will have to ask Jonathan Lang
22-May-06	1	Sun 150 Replacement	N/L	yi10-sq4	Tripped to the Off State, CAS swapped out as per Don.
24-May-06	1	QPA Fan Fault	PR-044	YHQP3W	YHQP3W - status: Air Flow Fault, Open Connector, Remote Or
26-May-06	1	PFN Circuit #1	PR-045	YMQ	Yellow Main Quad PFN Circuit #
29-May-06	1	Node Card Chassis Reset	N/L	9A-R2	Tripped supplies OH, Alarm Status: due to "Local, Reset Node Card" Alarr
30-May-06	1	QPA-PS Cable Fault	PR-047	yo1-qd1	yo1-qd1-ps QPA to PS Cable Fail
31-May-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q2 Brk #3, Sector 3 Snake Mantua Tree Heater
1-Jun-06	1	K-lock Connection	PR-048	K-lock	Cable connection between the 1h-qd1 quench detector and the permit module
1-Jun-06	1	Toldo Box Replaced	PR-049	h-qnim	B-qnim-ps Toldo Box (Tunnel Access granted to work on 1h-qd1 - ref to PR-048)
1-Jun-06	1	1h-qd1 Restart	PR-050	Quench Det	Quench Detector restart at 1h-qd1
1-Jun-06	1	Ice Team Brk Trip	N/L	Breaker	PSQ2Q2 Brk #3, Sector 3 Snake Magnet Tree Heater
2-Jun-06	1	Sun 150 Replacement	N/L	yi7-sq6	Tripped on an AC Phase Fault and was swapped out
2-Jun-06	1	QPA-PS Cable Fault	PR-051	yo1-qd1	yo1-qd1-ps QPA to PS Signal Loss since Cable was replaced
3-Jun-06	1	Node Card Chassis Reset	N/L	7A-R4	Reset Node Card in Alcove 7A Rack #2 due to Reset Node Card Alarm (MCR
6-Jun-06	1	QPA-PS Cable Fault	PR-052	yo1-qd1	yo1-qd1-ps QPA to PS Signal Loss since Cable was replaced
8-Jun-06	1	Breaker Reset	N/L	h-qmain	Trouble with Blue Quad control, cycle breaker #5 in 1004A RBQCIC
8-Jun-06	1	Current Monitor Fault	N/L	y-dmain	Current Monitor Fault during Recovery, would not clear, Carl contacted for assistance
8-Jun-06	1	Sunicraft 300 Replaced	N/L	High I-Test	Supply would not make High Current
8-Jun-06	1	Sunicraft 300 Replaced	N/L	High I-Test	Replacement Supply would not make High Curren
9-Jun-06	2	Current Reg Card	MCR	yo4-sq4	Beam Erratic in Yellow, found Ireg Relays bouncing, due to cracked land. Spare card stuck relays.
9-Jun-06	1	Current Reg Card	PR-055	h8-db0	Range error alarm for h8-db0 right at the time of the beam abort.
9-Jun-06	1	Error Signal	PR-056	h09-qf8	h09-qf8-ps Tripped on an Error
10-Jun-06	2	Sunicraft 300 Replaced	PR-057	h09-qf9	CAS replaced Power Supply s/n 004 with spare s/n 016. Spare Power Supply s/n 016 failed, CAS replaced with spare s/n 00
10-Jun-06	1	OFF	PR-058	y9-db0	y9-db0-ps tripped to the Off State with no faults
11-Jun-06	1	Breaker Reset	N/L	h-qmain	Trouble with Blue Quad control, cycle breaker #5 in 1004A RBQCIC
12-Jun-06	1	Oscillation	Beam Abort	h6-qf89	h6-qf89-ps Oscillation causing loss in the Blue Ring
13-Jun-06	1	QD UPS Fail	PR-059	UPS	2h Quench Detector UPS Failed tripping both links also fired the h1 and h2 dX Heaters
14-Jun-06	1	Node Card Chassis Reset	N/L	7A-R6	Tripped supplies OH, Alarm Status: due to "Local, Reset Node Card" Alarr
14-Jun-06	1	Node Card Chassis Replaced	N/L	7A-R6	Tripped supplies OH, Alarm Status: due to "Local, Reset Node Card" Alarm, CAS Replaced the Node Card Chassis
16-Jun-06	1	Reg Error	PR-061	YMQ	The 24 Volt to the PLC Remote I/O in the Hot Box was momentarily lost causing the Regulator to go Low
16-Jun-06	1	Current Reg Card	PR-062	yi10-db0	Current Regulator Card, K1 Local / Remote Relay found Faulti
17-Jun-06	1	Reg Error	PR-063	YMQ	The 24 Volt to the PLC Remote I/O in the Hot Box was momentarily lost causing the Regulator to go Low
20-Jun-06	1	Buffer Card	500GeV	yo8-qf2	The Alarm Log indicated several days of a IrefCurrentRangeError
21-Jun-06	1	Current Reg Card	PR-005	yo4-qd3	15v missing on one of the card channels.
21-Jun-06	1	Sunicraft 300 Replaced	PR-066	h09-qf89	h09-qf89-ps Failed at High Curren
22-Jun-06	1	Current Monitor Fault	PR-067	YMQ	Yellow Main Quad Power Supply, Current Monitor Fau
22-Jun-06	1	Current Monitor Fault	PR-068	YMQ	Yellow Main Quad Power Supply, Current Monitor Fau
22-Jun-06	1	Buffer Card	PR-071	yo4-qf8	yo4-qf8-ps Buffer Faults Just Reapbear
22-Jun-06	1	Current Reg Card	N/L	h0-db0	Relay Bounce, Tapping on Card Fixed Temp
22-Jun-06	1	QPA Fan Fault	N/L	yi7-sxf	Bypass Jumper Installed, CAS discovered Failed Fan Motor, replaced entire QPA
23-Jun-06	1	Node Card Chassis Reset	PD	11A-R2	Reset Node Card 11A-R2 after Power Dip
23-Jun-06	1	Node Card Chassis Reset	PD	1C-R2	Reset Node Card 11A-R2 after Power Dip
24-Jun-06	1	Control Card	PD	yi7-qd2	Recovering from Power Dip, FET Fail
24-Jun-06	3	PFN Fault	PR-079	YMQ	OPS Log: The main quads have pulled the yellow quench link 3 times this shift (PFN Faults) well after the power dips had subsided.
24-Jun-06	1	AC Phase Fault	PR-080	yo8-qf2	Power Dips, Cycled to Off
25-Jun-06	1	HKPS	PR-084	yo1-qf8	yo1-qf8-ps tripped to Illegal State (C00) HKPS Faile
25-Jun-06	1	PFN Fault	PR-081	YMQ	Undetermined, cleared as the Weather got bette
25-Jun-06	1	Regulator Error	PR-082	BMQ	Unexplained while working on the YMQ PFN Faul
25-Jun-06	1	Current Monitor Fault	PR-083	YMQ	Wrong PLC Program restored
26-Jun-06	1	QPA Crowbar	N/L	yi2-sq6	Higher then normal Voltage seen on PS ALL, QPA would trip at 16 vol
26-Jun-06	1	Current Monitor Fault	PR-085	BMQ	Ongoing switchcom between Flattop and Ramp
26-Jun-06	1	Sun 150 Replacement	N/L	h8-sq4	Tripped on an AC Phase Fault and was swapped out
Totals:	**128**				

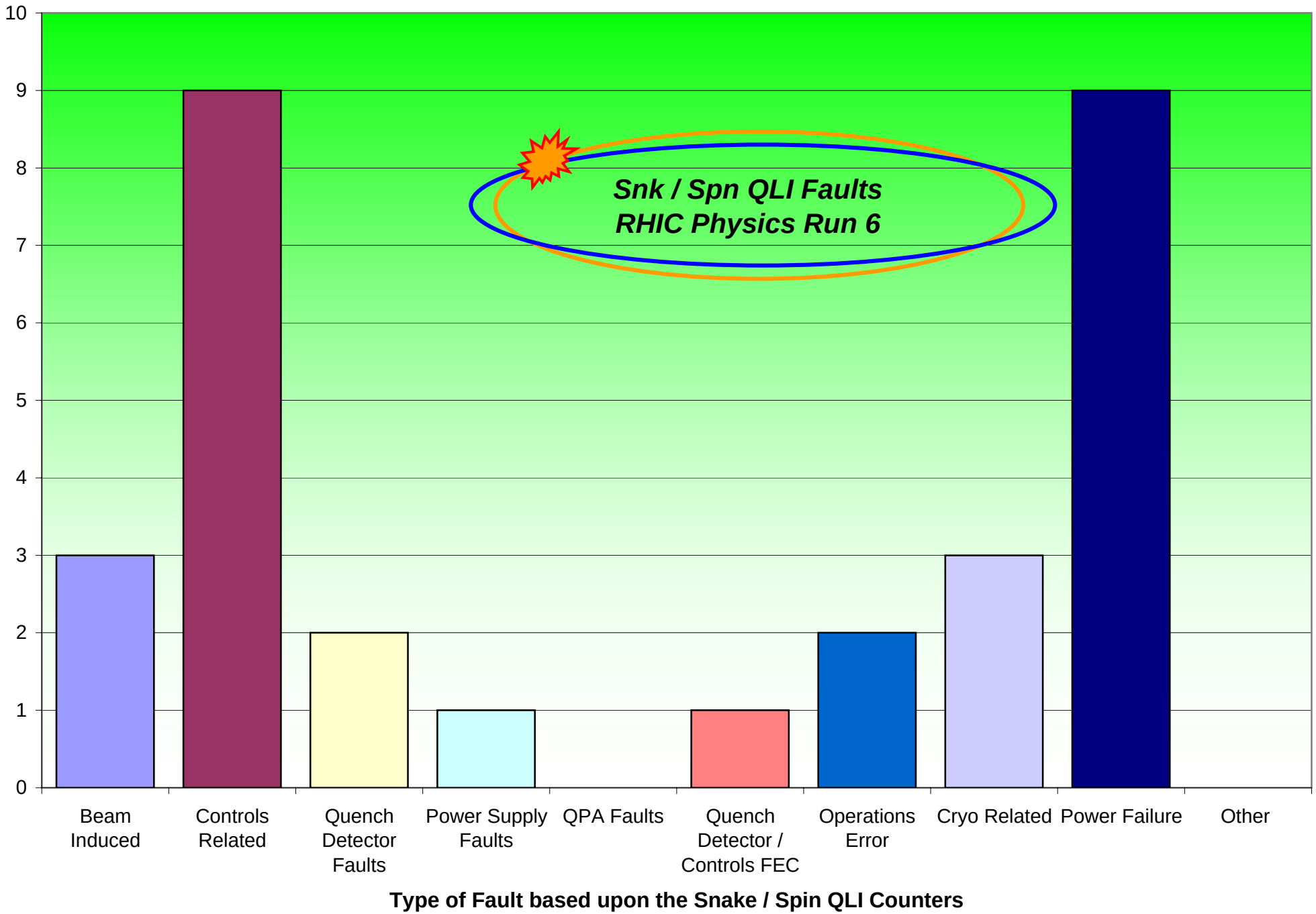

Bad Connections
Buffer Card
Bypass Fan Jumpers
D Connector
Firing Card
Gamma-T Off Trips
Gate Drive Board
300 Amp Suncraft
PS to QPA Cable
Ice Team Fans
Ice Team Sensors
Ireg Card
IGBT Module
IGBT Driver Card
Low Res Card
Node Card Cable
QPA Unit Fan Switch
Reversed Polarity
Voltage Reg Card
0
3
6
9
12
15
18
21
24
27
30
33
RHIC Physics Run 6
Polarized Proton
Collider Electrical Power Supply Group
Preventative Maintenance to Prevent Loss Time
During Machine / Physics Operations

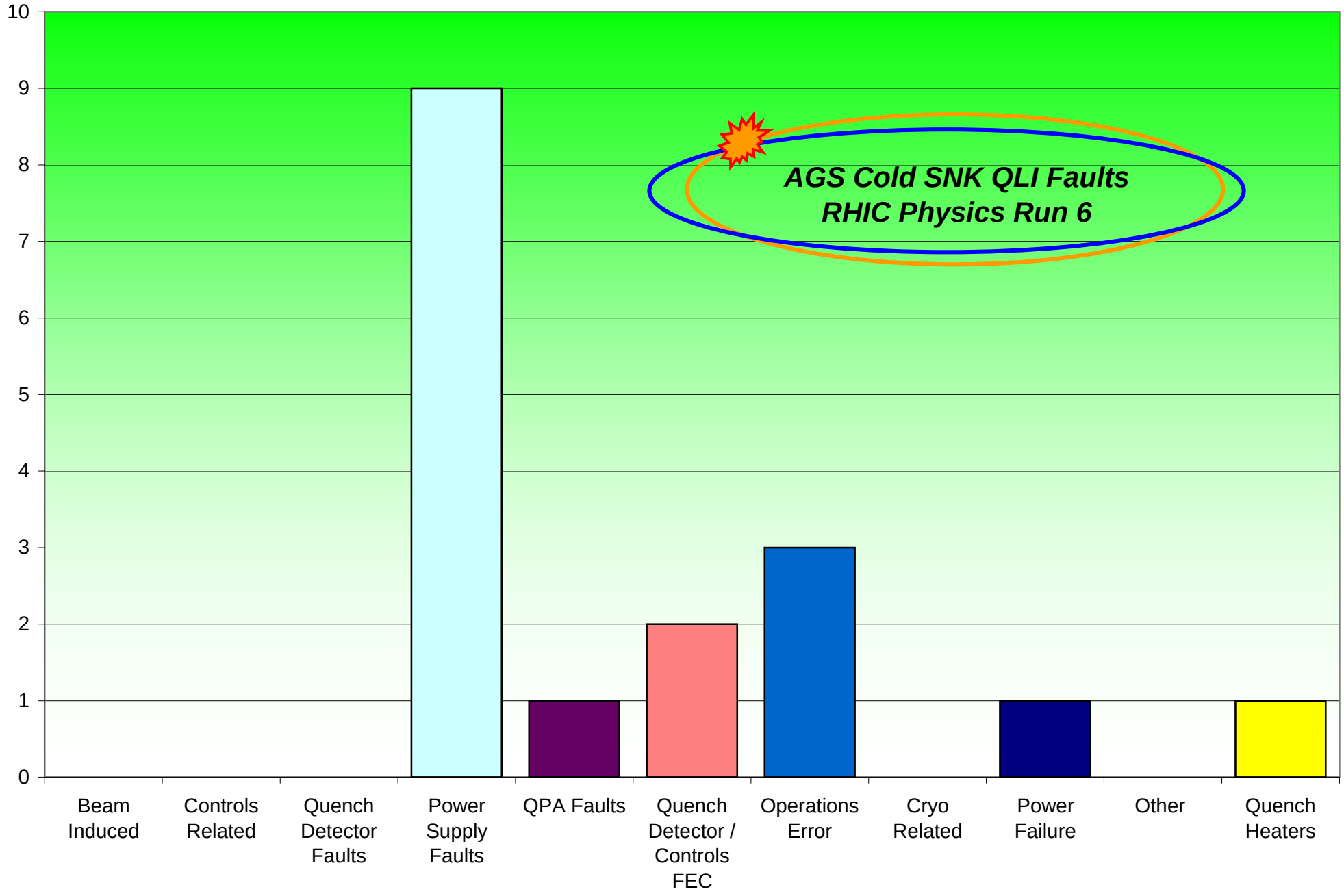
RHIC PHYSICS YEARLY RUN – QLI COUNTERS

Date	Qty	Identification	Fault	Action Taken
21-Feb-06	1	yi6-qf9	DCOC / Voltage Reg Card	Could not find the cause, swapped out the Voltage Regulator Card
28-Feb-06	4	yo9-qd7	Ireg, Firing, Buffer	1) Swapped current regulator card, firing card and buffer card for yo9-qd7ps. 2) Replaced J9 D connector and 3u chassis backplane of yo9-qd7-ps.
28-Feb-06	1	yo1-qf8	Ireg Card	Swapped out the Current Regulator Card
28-Feb-06	1	b8-q89	Ireg Card	Swapped out the Current Regulator Card
28-Feb-06	1	b2-q7	Wire Connection	Replaced gate drive wire to one SCR
28-Feb-06	4	QPA Fan Switches	Switches	Replaced bad qpa fan switches in 4 qpa's in 2B and 1 qpa in 4B
28-Feb-06	1	QPA	Switches	Replaced one qpa in 4B because of bad fan switches
28-Feb-06	1	bi5-rot3-2.3	Low Res Card	Swapped out Low Res card.
28-Feb-06	1	bi1-tv4	Faulty Reading	Replaced Node Card Cable
28-Feb-06	9	Cooling Fans	Ice Build Up	Added fans to magnet trees B8Q1, B8Q3 , B9Q3 , B12Q1, Y2Q1 , Y2Q2 , Y2Q3, Y9Q1 and Y9Q3
28-Feb-06	1	Y10-17TB	Ice Team Sensor	Replaced bad ice ball temperature sensor Y10-17TB.
2-Mar-06	1	b2-15TB	Ice Team Sensor	Sensor not responding, wrong ID Address was assigned
15-Mar-06	1	yo9-qd7	Current Spikes / Ireg Card	Swapped 3 channel isolation amplifier board between yo9-qd7 and yi10-qf7
15-Mar-06	1	yi3-qf7	Connection	Repaired connector on SCR gate of yi3-qf7
15-Mar-06	1	b8-q7	Gate Drive	Checked gate drive outputs of b8-q7 and they all looked good.
15-Mar-06	3	QPA Fan Switches	Switches	Swapped out qpa fan switches for yo12-qf2, yo12-qd1, and yi3-qf7
15-Mar-06	2	yo9-qgt / yi10-qgt	Off	Swapped Iref and Digital Iso Cards between yi10-qgt and bo10-qgt, bypasses Under Voltage Circuit in yi10-qgt and yo9-qgt
28-Mar-06	1	yo12-qd3	Gate Drive	Replaced Faulty Gate Drive Board, Transformer TR2 Secondary burnt due to failed C7 Cap
4-Apr-06	1	Reversed Polarity	yo4-cqs9	Swapped the sextupole magnet leads on yo4-cqs9.
4-Apr-06	2	QPA Fan Switches	Switches	Swapped out bad qpa fan switches for yi3-tq4 and bo3-qd7
19-Apr-06	1	bi4-tq4	Buffer Card	Original Card indicated 1/2 the value for voltage. New Type1 Buffer Card fixed the problem, no problems found with the original card.
3-May-06	1	bo11-qd1-ps	Current Reg Card	Power supply was coming up on the Alarm Page with a range error fault. Swapped out current regulator card for bo11-qd1 because of a bad relay. D. Bruno
3-May-06	1	yo5-tv17	Bad AC Connection	Supply tripped to the Off state, loose AC Connection at the rear of the power supply.
10-May-06	1	Y10-02TB	Ice Team Sensor	Replaced bad ice ball temperature sensor Y10-02TB.
10-May-06	1	Cooling Fans	Fan Fail	Replaced a failed fan on yo5-rot3 Magnet that was discovered on May 1
31-May-06	1	6K Dump Switches	Switches	Y9DQPSW and Y10DQPSW quench switches Fan switches (6 per unit) replaced
31-May-06	1	DX-Q4 Heaters	Ice Team Thermostat	Sector 1 Dx-Q4 magnet tree heaters and thermostats. Replaced YQ2 Thermostat and heater.
31-May-06	1	a20-csnk-sol-ps	Switches	Replaced qpa fan switches on A20-csnk-sol-qp.
31-May-06	1	yo1-qd1	Signal Cable	Replaced yo1-qd1-ps to yo1-qd1-qp signal cable.
8-Jun-06	1	yo1-qd1	Signal Cable	Faulty Ribbon Cable found from J102 to J11 Internal of Supply
8-Jun-06	1	b8-dh0	IGBT Module	Unable to make High Current Run Test, looking from the rear of the QPA, found Right Side IGBT Module blown. (Also replaced IGBT Driver Card)
8-Jun-06	1	bi9-q89	300 Amp Sun	Unable to make High Current Run Test, Swapped power Supply 1st attempt
8-Jun-06	1	bi9-q89	300 Amp Sun	Unable to make High Current Run Test, Swapped power Supply 2nd attempt
20-Jun-06	1	yo8-qf2	Buffer Card	MADC Current Readback bouncing, not real on the Power Supply
20-Jun-06	1	b2-dhX	IGBT Driver	Supply would Crowbar at the top, found 1 IGBT Driver Card of 4 to have faulty Caps
All Run 6	29	QPA Jumper Plugs	Preventative Fan Failure	Readings above allowable set standard, bypass plugs installed to prevent false fan failures until next available maintenance day (yi6-tq4, yi2-qf2, yi2-qf9, bi1-qd2, yo1-tq6, bo3-qf6, b-qtrim, b8-q7, bo10-qf6, yo12-qf2, yo12-qd3, yo12-qd1, yi3-qf7, yi3-tq4, bi5-qf9, yo4-qd1, bo3-qd7, b4-dhX, a20-ags-sol, yi10-dh0, yo4-qf2, bi4-tq6, bi8-qf1, yo9-tq6, bi9-dh0, Y10DQPSW, B10DQPSW, bi5-qf9, bo3-tq4)
Totals:	**82**			



Type of Fault based upon the Main QLI Counters


10
9
8
7
6
5
4
3
2
1
0
Snk / Spn QLI Faults
RHIC Physics Run 6
Beam Induced
Controls Related
Quench Detector Faults
Power Supply Faults
QPA Faults
Quench Detector / Controls FEC
Operations Error
Cryo Related
Power Failure
Other
Type of Fault based upon the Snake / Spin QLI Counters



Type of Fault based upon the AGS Snake QLI Counters